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SMPTE 154-2003
Revision of
ANSI/SMPTE 154-1998

SMPTE STANDARD

for Motion-Picture Film (8-mm Type S) — Projectable Image Area and Projector Usage

1 Scope

1.1 This standard specifies the maximum dimensions of the film image area intended for projection and its relative position to the reference edge and the perforations of 8-mm type S motion-picture film, as specified in SMPTE 149.

1.2 This standard also specifies the projection frame rate for 8-mm type S motion-picture film.

2 Emulsion and film position

2.1 For original reversal film, the emulsion side shall be toward the projection lens. For prints, the emulsion position is dependent upon the process of preparation and either emulsion-to-light-source or emulsion-to-projection-lens orientation may be encountered. The actual emulsion position should be indicated on the leader and film container by notation or diagram.

2.2 The perforation used for the film-positioning device shall be two perforations following the perforation adjacent to the projected aperture when the positioning device is at the end of its stroke (the minus-2 position). This location coincides with that of the positioning device required for 8-mm type S camera original films and thereby improves steadiness through cancellation.

3 Dimensions

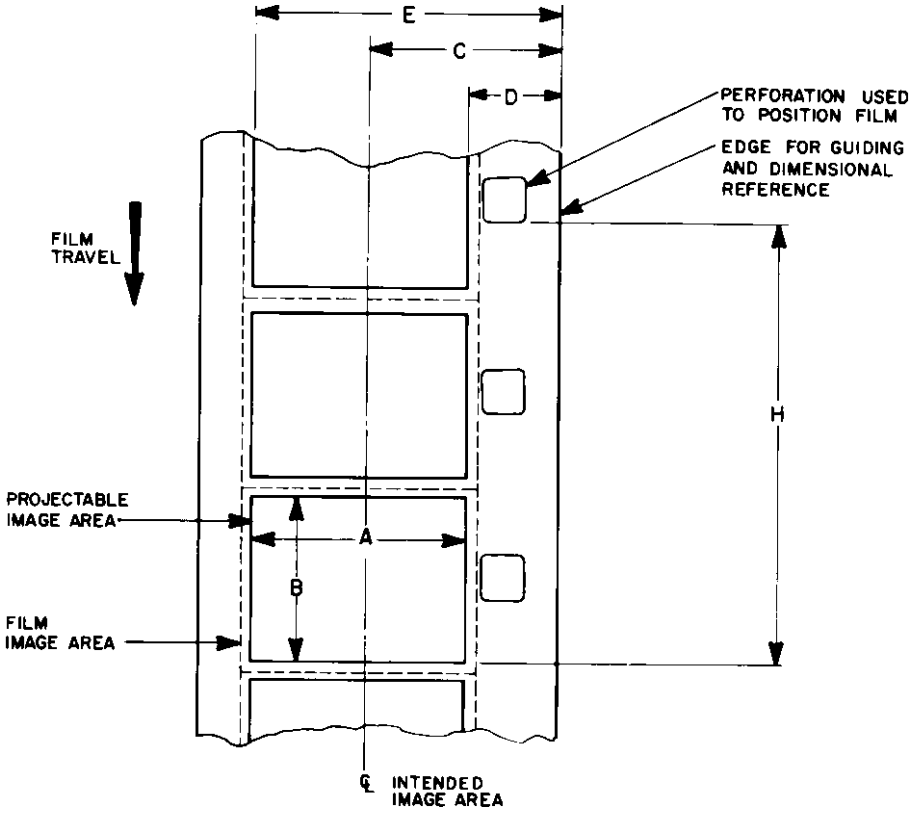
The dimensions shall be as given in figure 1 and table 1.

4 Projection frame rate

4.1 The standard frame rate for motion-picture projection is 24 frames per second. However, it is recognized that nonstandard frame rates are sometimes used for specific applications. For example, 24, 25, or 30 frames per second may be used for motion pictures intended for television, higher or lower frame rates may be used for special effects and analysis, and nonstandard rates may be used for special motion-picture systems. The use of nonstandard frame rates requires notification and agreement of all parties concerned with the use of the particular film.

4.2 A projection frame rate of 18 frames per second shall be used for nonprofessional films containing an audio record which was recorded for 18-frame projection.

Approved
October 20, 2003



NOTE – Film as seen from projector light source looking toward lens.

Figure 1 – Projectable image area

Table 1 – Specifications

Dimensions	Inches	Millimeters
A	0.209 ref	5.31 ref
B	0.158 max	4.01 max
C [1)]	0.170 ref	4.32 ref
D	0.063 min	1.60 min
E	0.278 max	7.06 max
H [2)]	0.389 nom	9.88 nom

[1)] See annex A.1.
[2)] See annex A.3

Annex A (informative)
Additional data

A.1 The centerlines of the image area are given for convenience in interpreting the standard, facilitating such applications as the optical design of equipment, and assisting in the understanding of suitable mechanical embodiments related to projectable image area. Note that the centerline of the projectable image area is displaced from the centerline of the film by 0.013 in (0.33 mm) nominal.

A.2 Because of the increased intensity of illumination available in modern 8-mm projection systems, the industry has found it desirable to extend the flicker threshold by choosing as high a projection rate (and, therefore, as high a flicker frequency) as practicable. A projection rate of 18 frames per second and a corresponding flicker frequency of 54 Hz (obtained with a three-blade shutter) has been found by experience to be an acceptable compromise.

A.3 Dimension H is measured lengthwise along the path of the film from the bottom of the maximum image area projected by the aperture to the bottom of the frame-positioning perforation (two perforations following the perforation adjacent to the projected image).

A.4 Dimensions B, D, and E define the maximum image area on the film that is available for projection. They do not define the opening in the aperture plate of a projector. The size of this opening may differ from dimensions A and B, for example, because of the physical separation necessary between the aperture plate and the film to avoid scratching the film, the slant of the marginal rays accepted by the projection lens, etc.

A.5 This standard may be used as the basis for establishing picture areas from original photography for final viewing because it presents a description of the picture area on the projection print and is consistent with commercial practices specified in SMPTE 153 and SMPTE 157.

Annex B (informative**)**
Bibliography

SMPTE 149-1999, Motion-Picture Film (8-mm Type S) — Perforated 1R

SMPTE 153-2001, Motion-Picture Film (8-mm Type S) — 16-mm Film Perforated 8-mm Type S (1-4) — Printed Areas

SMPTE 157-1999, Motion-Picture Film (8-mm Type S) — Camera Image Area and Projector Usage